

CSYE 6200: Concepts of Object-Oriented Design

FALL 2024

Course Information:

- **Course Title:** Concepts of Object-Oriented Design
- **Course Number:** CSYE 6200
- **Term and Year:** Fall, 2024
- **Credit Hour:** 4
- **CRN:** 16331

Instructor Information:

- **Instructor Name:** Prof. Chen-Hsiang (Jones) Yu, Ph.D.
- **Email Address:** jones.yu@northeastern.edu
- **Office Hours:** Listed in “Office Hours” section below

Instructor Biography:

Dr. Chen-Hsiang (Jones) Yu is a full Teaching Professor at the department of Multidisciplinary Graduate Engineering (MGEN) in the College of Engineering at Northeastern University. He is also an affiliated faculty member at the Center for Dynamical Biomarkers, Beth Israel Deaconess Medical Center/Harvard Medical School. He earned B.Eng. and M.S. in Computer Science and Information Engineering (CSIE) from Tamkang University (1998) and National Taiwan University (2000), and Ph.D. in Computer Science from MIT (2013). He won Blittersdorf Faculty Award, Sagan Faculty Fund Grants Award, two times of Faculty Grants Awards, six times of Presidential EPIC Mini Grants Awards, IEEE CCWC Best Paper Award, ACM UIST Best Poster Award, ACM CHI Student Research Competition, and several programming and entrepreneurship competitions. He has 60+ peer-reviewed publications. During his work in industry, he has joined to develop more than 12 commercialized mobile phones and several mobile applications. His research in HCI (Human-Computer Interaction) focuses on mobile health, AI on mobiles, web customization and automation, and readability enhancement. He is an IEEE senior member and ACM member.

Teaching Assistants:

- Virupakshappa, lnu.vir@northeastern.edu
- Sneha Giranje, giranje.s@northeastern.edu
- Raushan Kumar Jha, jha.rau@northeastern.edu
- Kevin Moses Rodrigues, rodrigues.k@northeastern.edu
- Chiragkumar Dharmeshkumar Maisuria, maisuria.c@northeastern.edu
- Manoj Chandrasekaran, chandrasedkaran.ma@northeastern.edu

Class Schedule:

- Lecture (T): 11:45 am - 1:25 pm
- Lecture (R): 2:50 pm - 4:30 pm

Office Hours: (Online via Zoom)

- Jones:
 - Hours: 4:30 pm - 5:30 pm (Thursday) and 5:10 pm - 6:10 pm (Friday)
 - Zoom Link: Available for registered students
- Sneha:
 - Hours: 1:00 pm - 2:00 pm (Monday)
 - Zoom Link: Available for registered students
- Chiragkumar:
 - Hours: 3:30 pm - 4:30 pm (Monday)
 - Zoom Link: Available for registered students
- Viru:
 - Hours: 10:30 am - 11:30 am (Tuesday)
 - Zoom Link: Available for registered students
- Kevin:
 - Hours: 1:00 pm - 2:00 pm (Thursday)
 - Zoom Link: Available for registered students
- Manoj:
 - Hours: 12:00 pm - 1:00 pm (Wednesday)
 - Zoom Link: Available for registered students
- Raushan:
 - Hours: 3:00 pm - 4:00 pm (Wednesday)
 - Zoom Link: Available for registered students

Course Prerequisites:

- None (However, we expect students to know fundamentals of programming in Java. If not, please study chapter 1 - 8 of the specified textbook offline to ensure you can follow up the lectures.)

Course Description:

- This course is an advanced introduction to Object-Oriented Design. It focuses on Object-Oriented Programming (OOP). Topics include, but are not limited to, abstraction and encapsulation, classes and methods, objects and references, overloading, inheritance, polymorphism, abstract classes and interfaces, console/file input/output, dynamic data structures, generics, and GUI applications. We will use Java as the programming language to practice all learned knowledge.

Course Learning Outcomes:

At the completion of this course, the student should be able to:

- Describe the differences between traditional programming and object-oriented programming
- Explain concepts related to object-oriented programming, including classes, objects, methods, inheritance, polymorphism, interfaces, overloading vs. overriding, and encapsulation
- Develop and analyze programs that make use of abstract data types (e.g., lists, stacks)
- Design and implement applications with a GUI interface

Required Course Textbook:

- Liang, Y. Daniel. *Introduction to Java Programming, Comprehensive Version*, 12th edition, Pearson, 2019. (ISBN-13: 978-01346520238)

Course Website:

- <https://northeastern.instructure.com/courses/192876>

Assignment Grading:

There will be 5 assignments required to submit during the course. These lab assignments will test the student's ability to think, write and test complete programs from start to finish. Each lab assignment will include a detailed description of the problem and expectations for successful completion. The details will be defined in each lab assignment.

There is a midterm exam in this class, but there will be no final exam. Instead, students will work in teams to complete the final project that incorporates programming constructs and elements from throughout the semester. Each team will have 4 members. Each team will present their final project at the end of the semester.

Specifically, student grades are based upon the following criteria:

Attendance & Participation	Weekly	5%
Lab Assignments	5 assignments	30%
Midterm Exam	Middle of the semester	25%
Final Project Presentation and Demo	Last week of the semester	15%
Final Project Submission	Last week of the semester	25%

Grading Scale: (Updated)

Grade	Weight	Numerical Definition	Definition
A	4.000	95-100	Student learning and accomplishment far exceeds published objectives for the course/test/assignment and student work is distinguished consistently by its high level of competency and/or innovation.
A-	3.667	90-94.9	
B+	3.333	87-89.9	Student learning and accomplishment meets all published objectives for the course/test/assignment and student work demonstrates the expected level of understanding and application of concepts introduced.
B	3.000	84-86.9	
B-	2.667	80-83.9	
C+	2.333	77-79.9	Student learning and accomplishment based on the published objectives for the course/test/assignment were met with minimum passing achievement.
C	2.000	74-76.9	
C-	1.667	70-73.9	
F	0.000	69.9 or below	Student learning and accomplishment based on the published objectives for the course/test/assignment were not sufficiently addressed or met.

<https://registrar.northeastern.edu/article/university-grading-system/>

Attendance/Late Work Policy:

Attendance Policy

Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed a maximum of 2 absences per course, with 3 or more absences resulting in an automatic "F" for that course. Students are expected to inform their instructors of any absences in advance of the class; if a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak with their Academic Advisor (coe-mgen-gradadvising@northeastern.edu) to learn more about the Medical leave of Absence. Should a student anticipate

being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other types of leave in accordance with the University's academic and global entry expectations. International students should review the Office of Global Services webpage to understand their visa compliance requirements. Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

Late Work Policy

Students must submit assignments by the deadline in the time zone noted in the syllabus. Students must communicate with the faculty prior to the deadline if they anticipate work will be submitted late. Work submitted late without prior communication with faculty will not be graded.

End-of-Course Surveys:

Your feedback regarding your educational experience in this class is particularly important to the College of Engineering. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this course, please take the time to complete the evaluation survey at <https://neu.evaluationkit.com>. Your survey responses are completely anonymous and confidential. For courses 6 weeks in length or shorter, surveys will be open one week prior to the end of the courses; for courses greater than 6 weeks in length, surveys will be open for two weeks. An email will be sent to your Northeastern University Mail account notifying you when surveys are available.

Academic Integrity:

A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to <http://www.northeastern.edu/osccr/academic-integrity-policy/> to access the full academic integrity policy.

MGEN Student Feedback:

Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback regarding their program, may do so using this survey: https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaW0Ki

University Health and Counseling Services:

As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS. For more information, visit <https://www.northeastern.edu/uhrs>.

Student Accommodations:

Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability. For more information, visit <https://drc.sites.northeastern.edu>.

Library Services:

The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for education specific resources, visit <https://library.northeastern.edu> Network Campus Library Services: [Northeastern University Library Global Campus Portals](#)

24/7 Canvas Technical Help:

For immediate technical support for Canvas, call 617-373-4357 or email help@northeastern.edu

Canvas Student Resources: <https://canvas.northeastern.edu/student-resources/>

For assistance with my Northeastern e-mail, and basic technical support:

Visit ITS at <https://its.northeastern.edu>

Email: help@northeastern.edu

ITS Customer Service Desk: 617-373-4357

Diversity and Inclusion:

Northeastern University is committed to equal opportunity, affirmative action, diversity, and social justice while building a climate of inclusion on and beyond campus. In the classroom, members of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration, and an awareness of global perspectives on social justice.

Please visit <http://www.northeastern.edu/oidi/> for complete information on Diversity and Inclusion

Title IX:

Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.

Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty, and staff.

In case of an emergency, please call 911.

Please visit <https://www.northeastern.edu/ouec> for a complete list of reporting options and resources both on- and off-campus.

Course Schedule/Topics Covered:

The following schedule is tentative and subject to change (including topics and assignments).

Week	Topic	Reading	Assignments
1	Fundamentals of Programming	Chapters 1 - 8	
2	Fundamentals of Programming	Chapters 1 - 8	
3	Object Oriented Programming	Chapters 9 - 10	Assignment 1 Due
4	Object Oriented Programming	Chapters 9 - 10	
5	Inheritance and Polymorphism	Chapters 11 - 12	Assignment 2 Due
6	GUI Basics	Chapter 14	
7	Midterm Exam Review		Midterm Exam
8	Abstract Classes, Interfaces	Chapter 13	Assignment 3 Due
9	Event-Driven Programming	Chapter 15	
10	Advanced GUI Programming, Generics	Chapter 15 - 16, 19	Assignment 4 Due
11	Recursion	Chapter 18	Assignment 5 Due
12	Collections and Iterators	Chapter 20	
13	Lists, Stacks, Queues	Chapter 20	
14	Sets, Maps and Summary		Final Project Presentation and Demo Due Final Project Submission Due
15	Final Exam Week - No Classes		